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**Docket No: 7238/0H418-US0**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Peter Augustinius Johannes ACHTEN

Serial No. 09/601,961 Art Unit: 3745

Confirmation No.: 5233

Filed: August 25, 2000 Examiner: Frank D. LOPEZ

For: **APPARATUS FOR EXECUTING ACTIVITIES ASSISTED BY HYDROMOTORS AND A HYDRAULIC TRANSFORMER FOR USE IN SUCH AN APPARATUS**

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**PENDING CLAIMS AS OF DECEMBER 11, 2002**

December 11, 2002

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

21. (Twice Amended) An apparatus for executing activities assisted by equipment driven by at least one of a rotating and a linear hydromotor whereby at least one of the hydromotors is at least one of loadable and movable in two directions and a connecting line

solely connecting at least one of the hydromotors to a hydraulic transformer, the apparatus comprising:

a pressure source for storing and delivering fluid of high pressure,

a high-pressure line solely connecting the pressure source to the hydraulic transformer, the hydraulic transformer being provided with a rotor;

a tank for at least one of receiving and supplying fluid at low pressure and connected to at least one of the hydraulic transformer and the connecting line;

a continuously variable setting controlled by an adjustment means,

a control means for controlling the adjustment means and thereby controlling the fluid pressure in the connecting line, wherein the control means comprise a sensor for measuring the flow in the connecting line between the hydromotor and the hydraulic transformer.

22. An apparatus according to claim 21, wherein the sensor is a flow sensor in one of the connecting lines.

23. An apparatus according to claim 21, wherein the sensor is a revolution sensor for measuring the rate of rotation of the rotor.

24. An apparatus according to claim 21, wherein the sensor is a movement sensor for measuring the rate of movement of the hydromotor.

25. An apparatus according to claim 21, wherein the sensor forms part of a flow restriction valve in the high-pressure line to at least one of the hydraulic transformer and the connecting line.

26. An apparatus according to claim 21, wherein the sensor is coupled with the adjustment means for, subject to the flow rate measured, adjusting the fluid pressure in the connecting line.

27. An apparatus according to claim 21, wherein the pressure source comprises an aggregate and the control means are adjusted such that the hydromotor uses less power than an adjustable value which is a portion of the power the aggregate is capable of supplying.

28. An apparatus according to claim 21, wherein the hydraulic transformer is provided with means for causing the pressure in the connecting lines to oscillate around an adjustable value at a frequency of at least 3 Hertz.

29. An apparatus according to claim 21, wherein the adjustment means changes the setting within 500 msec froma first extreme setting via the zero position to a second extreme setting.

30. An apparatus according to claim 21, wherein the adjustment means are provided with spring-activated elements for returning the hydraulic transformer into a neutral position wherein the pressure in the connecting lines is minimal.

31. An apparatus according to claim 21, wherein the hydromotor is a linear cylinder connected with the hydraulic transformer by one connecting line that is coupled to the low-pressure line via a non-return valve.

32. An apparatus according to claim 21, wherein a hydraulic transformer, the connecting lines and the hydromotor connected thereto are suitable for a pressure exceeding the pressure prevailing in the high-pressure line.

33. A hydraulic transformer for use in an apparatus according to claim 21, wherein a first fluid flow having a first pressure is transformed into a second fluid flow having a second pressure, comprising a housing, a first line connection, a second line connection and a third line connection, a rotor which in relation to the housing is limitlessly rotatable, a plurality of fluid chambers whose volume, when the rotor rotates at a first angle, varies

between a minimum and a maximum volume, and a face plate provided with face plate conduits for, while the rotor is rotating, alternatingly connecting the fluid chambers with the three line connections, which face plate is rotatable around a rotation axis in relation to the housing and is provided with means for without interruption keeping a face plate conduit in communication with the respective line connection while the face plate is rotating, wherein the face plate, in relation to the housing, is able to rotate at a second angle which is similar to the first angle.

34. A hydraulic transformer for use in an apparatus according to claim 21, wherein a first fluid flow having a first pressure is transformed into a second fluid flow having a second pressure, the hydraulic transformer comprising a housing, a first line connection, a second line connection and a third line connection, a rotor which in relation to the housing is limitlessly rotatable having a plurality of fluid chambers whose volume during rotation of the rotor varies between a minimum volume and a maximum volume, a plurality of face plate gates for closing the fluid chambers and rotor conduits for connecting the face plate gates with the fluid chambers, and a face plate provided with three rotor gates cooperating with the face plate gates which during rotation of the rotor serve for closing and alternatingly connecting the fluid chambers with the three line connections, wherein the maximum volume of the fluid chambers to be closed by means of the face plate is maximally five times as large as the minimum volume.

35. A hydraulic transformer according to claim 34, wherein the maximum volume of the fluid chambers to be closed by means of the face plate is maximally three times the minimum volume.

36. A hydraulic transformer according to claim 34, wherein the rotor has between nine and twelve fluid chambers.

37. A hydraulic transformer according to claim 34, wherein the rotor gates are separated by walls and the face plate gates and the rotor gates are dimensioned such that at least two rotor gates are of the same size, and all three walls between the rotor gates can close a fluid chamber simultaneously.

38. A hydraulic transformer according to claim 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface, the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, and each being in communication with a face plate conduit, wherein the third face plate conduit is in communication with a housing gate located at a third radius which is different from the second radius.

39. (Amended) A hydraulic transformer according to claim 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface and between the first separating surface and the second separating circumference, by an external circumference, the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, each being in communication with a face plate conduit and the third face plate conduit is in communication with a housing gate at the external circumference of the face plate.

40. A hydraulic transformer according to claim 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface, the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, and each being in communication with a face plate conduit, the third face plate conduit is in communication with a housing gate near the rotation axis of the face plate.

41. A hydraulic transformer according to claim 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing

away from the fluid chambers by a second separating surface, the first separating surface comprising at least three rotor gates located at first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, and each being in communication with a face plate conduit, at the second separating surface, the housing is provided with four face plate gates located at the second radius; two face plate gates being positioned diametrically opposite one another and being in direct communication with the first and the second line connection respectively, while the other two face plate gates positioned diametrically opposite one another are in communication via a shuttle valve with the first and a second line connection.

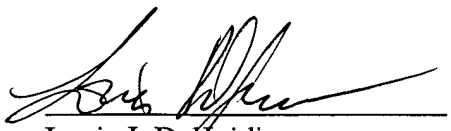
42. A hydraulic transformer according to claim 41 wherein the shuttle valve forms part of the face plate.

43. A hydraulic transformer according to claim 33, wherein the rotor has between nine and twelve fluid chambers.

44. A hydraulic transformer according to claim 33, wherein the rotor gates are separated by walls and the face plate gates and the rotor gates are dimensioned such that at least two rotor gates are of the same size, and all three walls between the rotor gates can close a fluid chamber simultaneously.

45. A hydraulic transformer according to claim 41 wherein the shuttle valve is coupled to the face plate.

Respectfully submitted,



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